

## PCT

(PCT Rule 61.2)

Commissioner  
US Department of Commerce  
United States Patent and Trademark  
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ETATS-UNIS D'AMERIQUE  
in its capacity as elected Office

<b>Date of mailing (day/month/year)</b> 26 July 2001 (26.07.01)	<b>ETATS-UNIS D'AMERIQUE</b> in its capacity as elected Office
<b>International application No.</b> PCT/EP00/10502	<b>Applicant's or agent's file reference</b> 33 060 M/Mq.
<b>International filing date (day/month/year)</b> 25 October 2000 (25.10.00)	<b>Priority date (day/month/year)</b> 26 October 1999 (26.10.99)
<b>Applicant</b> GILLET, Francois et al	

- ☒ in the demand filed with the International Preliminary Examining Authority on:
- 07 May 2001 (07.05.01)

- ☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was  
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<p><b>The International Bureau of WIPO</b>  <b>34, chemin des Colombettes</b>  <b>1211 Geneva 20, Switzerland</b></p> <p>Facsimile No.: (41-22) 740.14.35</p>	<p>Authorized officer</p> <p><b>Odile ALIU</b></p> <p>Telephone No.: (41-22) 338.83.38</p>
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**PCT**

From the INTERNATIONAL BUREAU

**NOTIFICATION OF THE RECORDING  
OF A CHANGE**

(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

To:

**CABINET PRUGNEAU-SCHAUB**  
Att: M. Prugneau  
36, rue des Petits Champs  
F-75002 Paris  
FRANCE

<b>Date of mailing (day/month/year)</b> 18 April 2001 (18.04.01)	
<b>Applicant's or agent's file reference</b> 33 060 M/Mq.	<b>IMPORTANT NOTIFICATION</b>
<b>International application No.</b> PCT/EP00/10502	<b>International filing date (day/month/year)</b> 25 October 2000 (25.10.00)

<b>1. The following indications appeared on record concerning:</b> <input type="checkbox"/> the applicant <input type="checkbox"/> the inventor <input checked="" type="checkbox"/> the agent <input type="checkbox"/> the common representative		
<b>Name and Address</b> MEISSNER, P., E. Meissner & Meissner Hohenzollerndamm 89 14199 Berlin Germany	<b>State of Nationality</b>	<b>State of Residence</b>
	<b>Telephone No.</b> 0 30/ 8 95 29 10	
	<b>Facsimile No.</b> 0 30/ 8 26 51 08	
	<b>Teleprinter No.</b>	
<b>2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:</b> <input type="checkbox"/> the person <input checked="" type="checkbox"/> the name <input checked="" type="checkbox"/> the address <input type="checkbox"/> the nationality <input type="checkbox"/> the residence		
<b>Name and Address</b> CABINET PRUGNEAU-SCHAUB Att: M. Prugneau 36, rue des Petits Champs F-75002 Paris France	<b>State of Nationality</b>	<b>State of Residence</b>
	<b>Telephone No.</b> 00331 40 20 16 16	
	<b>Facsimile No.</b> 00331 40 20 90 07	
	<b>Teleprinter No.</b>	
<b>3. Further observations, if necessary:</b>		
<b>4. A copy of this notification has been sent to:</b> <div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> the receiving Office  <input type="checkbox"/> the International Searching Authority  <input type="checkbox"/> the International Preliminary Examining Authority                         </div> <div> <input checked="" type="checkbox"/> the designated Offices concerned  <input type="checkbox"/> the elected Offices concerned  <input type="checkbox"/> other:                         </div> </div>		

<b>The International Bureau of WIPO</b> 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No.: (41-22) 740.14.35	<b>Authorized officer</b>  J. Leitao  Telephone No.: (41-22) 338.83.38
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(19) World Intellectual Property Organization  
International Bureau

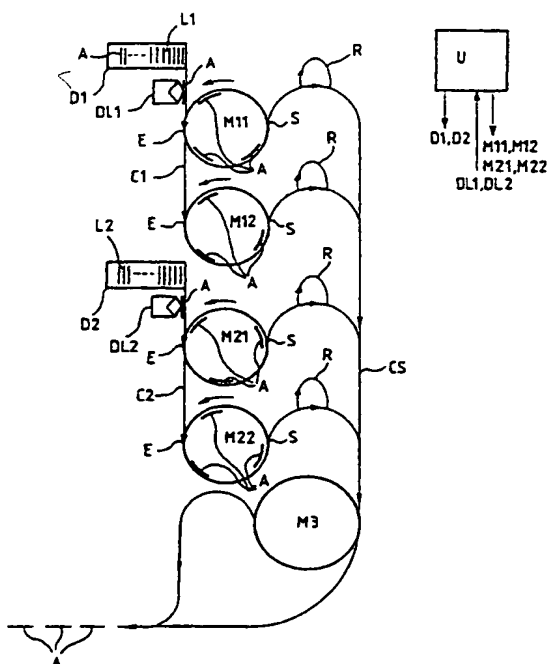


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3 May 2001 (03.05.2001)

PCT

(10) International Publication Number  
**WO 01/30514 A1**

- (51) International Patent Classification<sup>7</sup>: B07C 3/02
- (21) International Application Number: PCT/EP00/10502
- (22) International Filing Date: 25 October 2000 (25.10.2000)
- (25) Filing Language: English
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99/13362 26 October 1999 (26.10.1999) FR
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[FR/FR]; 120 bis, rue du Commandant Charcot, F-69005  
Lyon (FR). FORELLA, Guy [FR/FR]; Les Champs,  
F-07130 Saint Peray (FR).
- (54) Title: PROCESS AND MACHINE FOR MERGING ORDERED BATCHES OF OBJECTS, IN PARTICULAR BATCHES  
OF MAIL ITEMS
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ,  
DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,  
HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,  
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,  
NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM,  
TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian  
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European  
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,  
IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG,  
CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:  
— With international search report.
- For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.



(57) Abstract: The machine for merging batches of objects, in partic-  
ular batches (L1, L2) of mail items (A) previously ordered according  
to their order of distribution in the mailman's round, so as to constitute  
a single batch of mail items which is ordered according to the mail-  
man's round comprises: a) destacking units (D1, D2), b) linked to  
the exit of each destacking unit, one or more dynamic-storage mag-  
azines (M11-M22) in each of which the items are moved in series  
around a storage loop, and interposed between each destacking unit  
and a dynamic-storage magazine, a device (DL1, DL2) for reading a  
classifying cue on each destacked object; c) a conveyor (CS) in which  
said mail items are moved in series and to which the dynamic-storage  
magazines are linked in parallel, d) a control/command unit (U) for  
the destacking units and for the dynamic-storage magazines which,  
on the basis of the classifying cues read by the reading devices, con-  
trols the transferring of the mail items from the destacking units to the  
dynamic-storage magazines and then from the dynamic-storage mag-  
azines to the conveyor.

WO 01/30514 A1

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## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>33 060 M/Mq.</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/EP 00/ 10502</b>	International filing date (day/month/year) <b>25/10/2000</b>	(Earliest) Priority Date (day/month/year) <b>26/10/1999</b>
Applicant <b>ATECS MANNESMANN AG et al.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.

1



None of the figures.

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**Process and machine for merging ordered batches of objects, in particular batches of mail items**

The invention pertains to a process for merging in particular batches of mail items such as letters, each previously ordered according to the order of distribution of the mail items in the mailman's round, so as to constitute a single batch of mail items which is also ordered according to the order of distribution of the mail items in the mailman's round.

In mail distribution offices, it is usual practice to merge or bundle together batches of mail items which originate from various sorting offices so as to constitute a single batch of mail items which is prepared for the mailman's round. Hitherto, the merging of these batches of mail items has been carried out manually and therefore requires a great deal of time.

The purpose of the invention is to propose a process for automatically merging several batches of mail items.

To this end, the subject of the invention is a process for merging in particular batches of mail items, each previously ordered according to the order of distribution of the mail items in the mailman's round, so as to constitute a single batch of mail items which is also ordered according to the order of distribution of the mail items in the mailman's round, consisting in

a) loading said batches of mail items to be merged respectively into corresponding destacking units each able to deliver in series the mail items of a corresponding batch,

b) destacking a certain number of mail items from each destacking unit and causing each destacked mail item to travel past a device for reading the postal address of the mail item before transferring it to a dynamic-storage magazine which is associated with said destacking unit and in which the mail items are moved in series around a storage loop;

c) analyzing in a control/command unit of the destacking units and of the dynamic-storage magazines, the postal addresses of the mail items pending in the dynamic-storage magazines so as to control the transferring of these mail items to a conveyor to which the dynamic storage magazines are linked in parallel, according to a certain sequence in such a way that the mail items exit the conveyor in series according to their order of distribution in the mailman's round;

d) repeating steps b) and c) until the destacking units are completely emptied.

With the process according to the invention, several batches of mail items can be automatically merged in a single pass. The postal address recovered by the reading device can be a bar code which is now widely used in postal sorting offices.

According to a particular mode of implementation of the process according to the invention, in step b) indicated above, said mail items are transferred from a destacking unit to at least two dynamic-storage magazines each having a storage loop, these two dynamic-storage magazines being linked in parallel to said destacking unit and to the conveyor. It has been observed that it is preferable to use several storage loops of low storage capacity associated with a destacking unit rather than a single storage loop of larger storage capacity so as to transfer the mail items more speedily to the conveyor. The number of storage loops associated with a destacking unit and the storage capacity of each loop is a compromise between the speed of merging of the batches of mail items and the interclassification window required between batches of mail items.

An exemplary implementation of the process according to the invention is described hereinafter in detail and illustrated in the drawings.

Figure 1 shows very diagrammatically a machine for merging batches of mail items according to the process of the invention.

Figure 2 is a flowchart illustrating the manner of operation of the machine shown in Figure 1.

In Figure 1, the machine for merging batches of mail items according to the process of the invention comprises several destacking units, here two destacking units D1 and D2, each able to serialize mail items of a batch of mail items which is preordered for the mailman's round, here the batches L1 and L2 which are loaded respectively into the destacking units D1 and D2.

The exit of each destacking unit is linked to one or more dynamic-storage magazines which is or which are associated with the relevant destacking unit. In each dynamic-storage magazine, the mail items indicated by A are moved continuously in series around a storage loop.

In the example of Figure 1, the exit of the destacking unit D1 is linked to two storage loops M11 and M12 by way of a series conveyor C1, the entrances E of the two storage loops M11 and M12 being linked in parallel to the conveyor C1.

The destacking unit D2 is linked to two other storage loops M21 and M22 by way of another series conveyor C2. The entrances E of the two storage loops M21 and M22 are linked in parallel to the conveyor C2.

Each storage loop M11 to M22 comprises an entrance E and an exit S disposed at two points of the loop and is able to store a certain number of mail items, in the present case three mail items. Each storage magazine M11 to M22 comprises a routing flap (not represented) disposed at the entrance point E of the storage loop and a routing flap (not represented) disposed at the exit point S of the storage loop allowing the introduction or the extraction of a mail item in the storage loop.

A first reading device DL1 is disposed along the conveyor C1 between the exit of the destacking unit D1 and the entrance E of the storage loop M11 furthest upstream on the conveyor C1 so as to read the postal address of each mail item extracted from the destacking unit D1 which will be transferred to the storage loops M11 or M12.

A second reading device DL2 is disposed along the conveyor C2 between the exit of the destacking unit D2 and the entrance E of the storage loop M21 furthest upstream on the conveyor C2 so as to read the postal address of each mail item extracted from the destacking unit D2 which will be transferred to the storage loops M21 or M22.

The reading devices DL1 and DL2 can be devices for reading matrix codes, for example bar codes.

The exits S of the storage loops M11 to M22 are linked in parallel to an exit conveyor CS in which the mail items are conveyed in series.

The conveyors C1, C2 and CS can be belt-type conveyors known per se. The dynamic-storage magazines M11 to M22 can also be embodied in the form of belt-type conveyors.

A control/command unit U synchronizes the transferring of the mail items from the destacking units D1 and D2 to the dynamic-storage magazines M11 to M22, recovers the postal addresses read (or the bar codes) by the reading devices DL1 and DL2 and synchronizes the transferring of the mail items from the dynamic-storage magazines M11 to M22 to the exit conveyor CS so that the mail items A exit the conveyor CS according to their order of distribution in the mailman's round.

Each link between the exit S of a storage loop and the exit conveyor CS can include a delay line R mounted in parallel with the link and which serves to compensate for the differences in path length of the mail items between the exits S of the storage loops M11 to M22 and the exit of the conveyor CS so as to maintain a constant spacing between the mail items moved in series in the conveyor CS.

Moreover, another dynamic-storage magazine M3 having a storage loop which is mounted in parallel with the conveyor CS downstream of the point of

confluence with the dynamic-storage magazine M22 in such a way as to make it possible to recover certain defects of classification of the mail items in the batches L1 and L2 to be merged. It is of course understood that the delay lines R and the dynamic-storage magazine M3 are under the control of the control/command unit U.

The exit of the conveyor CS can feed the entrance to a device for stacking mail items so as to produce a stack of mail items which is ready for the mailman's round.

Figure 2 illustrates the manner of operation of the machine shown in Figure 1.

The batch L1 of mail items is therefore loaded into the destacking unit D1 and the batch L2 of mail items is loaded into the destacking unit D2. These two batches have previously been ordered according to the order of distribution of the mail items in the mailman's round.

If  $N1/2$  corresponds to the storage capacity in terms of number of mail items of a storage loop such as M11 (in the case of the example in Figure 1,  $N1/2$  is equal to 3), the control/command unit U acts on the units D1 and D2 so as to serialize on exit from D1,  $N1$  mail items, this being symbolized by the block 10, and on exit from D2,  $N1$  mail items, this being symbolized by the block 20.

The postal addresses (or corresponding bar codes) of the  $N1$  mail items serialized on exit from D1 and traveling past the reading device DL1 are recovered by the control/command unit U, this being symbolized by the block 11.

The postal addresses (or corresponding bar codes) of the  $N1$  mail items serialized on exit from D2 and traveling past the reading device DL2 are also recovered by the control/command unit U, this being symbolized by the block 21.

In tandem with their destacking from D1,  $N1/2$  first mail items A are initially transferred into the storage loop M11, this being represented by the block 12 and the following  $N1/2$  mail items A destacked from D1 are transferred into the storage loop M12, this being symbolized by the block 13.

At the same time, in tandem with their destacking from D2,  $N1/2$  first mail items A are initially transferred into the storage loop M21, this being represented by the block 22 and the following  $N1/2$  mail items A destacked from D2 are transferred into the storage loop M22, this being symbolized by the block 23.

The control/command unit U keeps in memory a logical representation of the mailman's round in respect of the mail items A loaded into D1 and D2, analyzes the postal addresses recovered by the reading devices DL1 and DL2 so as to reorder them according to the mailman's round held in logic form in memory, this being symbolized by the block 30, and commands accordingly, on the basis of

these exit postal addresses in conjunction with the location of the mail items in the storage loops, the extraction according to the appropriate sequence of the mail items from the loops M11 to M22 and their transfer to the conveyor CS so that these mail items exit the conveyor CS according to their order of distribution in the mailman's round.

Since the batches L1 and L2 are already preordered, the storage loop M11 is normally emptied before the storage loop M12 and the storage loop M21 is normally emptied before the storage loop M22, so that the storage loops M11 and M12 or M21 and M22 can operate alternately.

Thus, when the storage loop M11 is completely emptied, this being symbolized by the block 31, the control/command unit U acts on the unit D1 so as to serialize on exit from D1, N1/2 mail items, this being symbolized by the block 14, which are transferred into the storage loop M11, this being symbolized by the block 16, after being made to travel past DL1 for the reading of the postal addresses, this being symbolized by the block 15. Likewise, when the storage loop M21 is completely emptied, the control/command unit U acts on the unit D2 so as to serialize on exit from D2, N1/2 mail items, this being symbolized by the block 24, which are transferred into the storage loop M21, this being symbolized by the block 26, after being made to travel past DL2 for the reading of the postal addresses, this being symbolized by the block 25.

The block 32 symbolizes the analysis in the control/command unit U of the new postal addresses recovered by DL1 and DL2 for the corresponding transferring in sequence of the mail items to the conveyor CS.

Now, when the storage loop M12 is completely emptied, this being symbolized by the block 33, the control/command unit U acts on the unit D1 so as to serialize on exit from D1, N1/2 mail items, this being symbolized by the block 17, which are transferred into the storage loop M11, this being symbolized by the block 19, after being made to travel past DL1 for the reading of the postal addresses, this being symbolized by the block 18. Likewise, when the dynamic storage loop M22 is completely emptied, the control/command unit U acts on the unit D2 so as to serialize on exit from D2, N1/2 mail items, this being symbolized by the block 24, which are transferred into the storage loop M21, this being symbolized by the block 26, after being made to travel past DL2 for the reading of the postal addresses, this being symbolized by the block 25. The block 34 symbolizes the analysis in the control/command unit U of the postal addresses recovered by DL1 and DL2 for the corresponding transferring in sequence of the mail items to the conveyor CS.

The procedure loops back around the block 31 until D1 and D2 are completely emptied.

With the procedure indicated above, the interclassification window of the two batches of mail items corresponds to the storage capacity of two storage loops (6 mail items in the exemplary case of Figure 1).

Certain defects of classification in the batches of mail items L1 or L2 may be recovered by the control/command unit U by using the storage loop M3 whose capacity may be greater than that of one of the storage loops M11 to M22, the storage capacity of the loop M3 corresponding to the shifting of a mail item which it is possible to recover.

The process according to the invention can ideally be applied in respect of the merging of previously ordered batches of objects other than batches of mail items, for example, baggage items or the like, provided that each object bears a cue allowing its classification according to a certain sequence.

**CLAIMS**

1. Process for merging batches of objects (L1, L2), each previously ordered according to a certain classification of the objects (A), so as to constitute a single batch of objects which is also ordered according to said classification, consisting in

a) loading said batches of objects to be merged respectively into corresponding destacking units (D1, D2) each able to deliver in series the objects of a corresponding batch,

b) destacking a certain number of objects from each destacking unit and causing each destacked object to travel past a device (DL1, DL2) for reading a classifying cue of the object before transferring it to a dynamic-storage magazine (M11-M22) which is associated with said destacking unit and in which the objects are moved in series around a storage loop;

c) analyzing in a control/command unit (U) of the destacking units and of the dynamic-storage magazines, the classifying cues for the objects pending in the dynamic-storage magazines so as to control the transferring of these objects to a conveyor (CS) to which the dynamic storage magazines are linked in parallel, according to a certain sequence in such a way that the objects exit the conveyor in series according to the order corresponding to said classification;

d) repeating steps b) and c) until the destacking units are completely emptied.

2. Process according to claim 1, in which in step b), said objects are transferred from a destacking unit to at least two dynamic-storage magazines each having a storage loop, these two dynamic-storage magazines being linked in parallel to said destacking unit and to the conveyor.

3. Machine for merging batches of objects (L1, L2), each previously ordered according to a certain classification of the objects (A), so as to constitute a single batch of objects which is also ordered according to said classification, comprising

a) destacking units (D1, D2) each able to serialize a batch of objects,

b) linked to the exit of each destacking unit, one or more dynamic-storage magazines (M11-M22) associated with the destacking unit and in each of which the objects are moved in series around a storage loop, and interposed between each destacking unit and a dynamic-storage magazine associated with said destacking

unit, a device (DL1, DL2) for reading a classifying cue past which travels each destacked object of said destacking unit;

c) a conveyor (CS) in which said objects are moved in series and to which the dynamic-storage magazines are linked in parallel,

d) a control/command unit (U) for the destacking units and for the dynamic-storage magazines which, on the basis of the classifying cues read by the reading devices, controls the transferring of the objects from the destacking units to the dynamic-storage magazines and then from the dynamic-storage magazines to the conveyor in such a way that the objects exit the conveyor in series according to an order corresponding to said classification.

4. The machine according to claim 3, in which the link between the exit (S) of a dynamic storage magazine (M11-M22) and the conveyor (CS) includes a delay line (R).

5. The machine according to one of claims 3 or 4, in which the conveyor (CS) is furnished with a dynamic-storage magazine (M3) with a storage loop.

6. Use of the process according to one of claims 1 or 2 or of the machine according to one of claims 3 to 5, for merging batches of mail items, each previously ordered according to the order of distribution of the mail items in the mailman's round, so as to constitute a single batch of mail items which is also ordered according to the order of distribution of the mail items in the mailman's round.



# INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 00/10502

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 B07C3/02

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B07C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 834 354 A (GRAPHA HOLDING AG) 8 April 1998 (1998-04-08) column 1, paragraph 1 column 2, line 12 -column 7, line 30; figures	1,3-6
Y	US 4 244 672 A (LUND GEORGE E) 13 January 1981 (1981-01-13) column 2, line 3 - line 65	1,3-6
A	US 5 755 316 A (REIST WALTER) 26 May 1998 (1998-05-26)	

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

\*A\* document defining the general state of the art which is not considered to be of particular relevance

\*E\* earlier document but published on or after the international filing date

\*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

\*O\* document referring to an oral disclosure, use, exhibition or other means

\*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*S\* document member of the same patent family

Date of the actual completion of the international search

21 December 2000

Date of mailing of the international search report

03/01/2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
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Authorized officer

Gélébart, Y

# INTERNATIONAL SEARCH REPORT

Information on patent family members

Interr. Application No

PCT/EP 00/10502

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0834354 A	08-04-1998	CN 1185358 A JP 10192788 A US 6059091 A	24-06-1998 28-07-1998 09-05-2000
US 4244672 A	13-01-1981	NONE	
US 5755316 A	26-05-1998	CH 689556 A DE 19604999 A GB 2298640 A, B	15-06-1999 12-09-1996 11-09-1996

## PATENT COOPERATION TREATY

## PCT


REC'D 15 OCT 2001

WIPO

PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference BR-25430/WO	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP00/10502	International filing date (day/month/year) 25/10/2000	Priority date (day/month/year) 26/10/1999
International Patent Classification (IPC) or national classification and IPC B07C3/02		
Applicant MANNESMANN DEMATIC POSTAL AUTOMATION S.A. et al.		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 4 sheets.</p>		
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"><li>I <input checked="" type="checkbox"/> Basis of the report</li><li>II <input type="checkbox"/> Priority</li><li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li><li>IV <input type="checkbox"/> Lack of unity of invention</li><li>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li><li>VI <input type="checkbox"/> Certain documents cited</li><li>VII <input type="checkbox"/> Certain defects in the international application</li><li>VIII <input type="checkbox"/> Certain observations on the international application</li></ul>		
Date of submission of the demand  07/05/2001	Date of completion of this report  11.10.2001	
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Mayer, R  Telephone No. +49 89 2399 2094	



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# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/10502

## I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

### Description, pages:

3-6	as originally filed			
1,2	as received on	18/09/2001	with letter of	12/09/2001

### Claims, No.:

1-8	as received on	18/09/2001	with letter of	12/09/2001
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### Drawings, sheets:

1/2,2/2	as originally filed
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2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

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**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/EP00/10502

- ☐ the description,      pages:  
☐ the claims,      Nos.:  
☐ the drawings,      sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes:	Claims	1-8
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-8
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-8
	No:	Claims	

2. Citations and explanations  
**see separate sheet**

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**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/EP00/10502

**Item V:**

The preamble of claim 1 is known from EP-A-0834354.

Difference of claims 1 and 4: A destacking unit is provided with a first and a second dynamic-storage magazine, and a control unit is present for loading the first storage magazine with a certain number of first ordered object and for loading the second magazine with an amount of following ordered objects.

US-A-4244672: The objects are delivered to the buffers 10 in a random manner (col. 3). Therefore, the subject-matter of claims 1 and 4 is considered to involve an inventive step. The dependent claims concern particular embodiments of claims 1 and 4, respectively. The industrial applicability is obvious.

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**CLAIMS**

1. Process for merging batches of objects (L1, L2), each previously ordered according to a certain classification of the objects (A), so as to constitute a single batch of objects which is also ordered according to said classification, consisting in

a) loading said batches of objects to be merged respectively into corresponding destacking units (D1, D2) each able to deliver in series the objects of a corresponding batch,

b) destacking a certain number of objects from each destacking unit and causing each destacked object to travel past a device (DL1, DL2) for reading a classifying cue of the object before transferring it to a dynamic-storage magazine (M11-M22) which is associated with said destacking unit and in which the objects are moved in series around a storage loop;

c) analyzing in a control/command unit (U) of the destacking units and of the dynamic-storage magazines, the classifying cues for the objects pending in the dynamic-storage magazines so as to control the transferring of these objects to a conveyor (CS) to which the dynamic storage magazines are linked in parallel, according to a certain sequence in such a way that the objects exit the conveyor in series according to the order corresponding to said classification;

d) repeating steps b) and c) until the destacking units are completely emptied.

2. Process according to claim 1, in which in step b), said objects are transferred from a destacking unit to at least two dynamic-storage magazines each having a storage loop, these two dynamic-storage magazines being linked in parallel to said destacking unit and to the conveyor.

3. Machine for merging batches of objects (L1, L2), each previously ordered according to a certain classification of the objects (A), so as to constitute a single batch of objects which is also ordered according to said classification, comprising

a) destacking units (D1, D2) each able to serialize a batch of objects,

b) linked to the exit of each destacking unit, one or more dynamic-storage magazines (M11-M22) associated with the destacking unit and in each of which the objects are moved in series around a storage loop, and interposed between each destacking unit and a dynamic-storage magazine associated with said destacking

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Article 34*

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unit, a device (DL1, DL2) for reading a classifying cue past which travels each destacked object of said destacking unit;

c) a conveyor (CS) in which said objects are moved in series and to which the dynamic-storage magazines are linked in parallel,

d) a control/command unit (U) for the destacking units and for the dynamic-storage magazines which, on the basis of the classifying cues read by the reading devices, controls the transferring of the objects from the destacking units to the dynamic-storage magazines and then from the dynamic-storage magazines to the conveyor in such a way that the objects exit the conveyor in series according to an order corresponding to said classification.

4. The machine according to claim 3, in which the link between the exit (S) of a dynamic storage magazine (M11-M22) and the conveyor (CS) includes a delay line (R).

5. The machine according to one of claims 3 or 4, in which the conveyor (CS) is furnished with a dynamic-storage magazine (M3) with a storage loop.

6. Use of the process according to one of claims 1 or 2 or of the machine according to one of claims 3 to 5, for merging batches of mail items, each previously ordered according to the order of distribution of the mail items in the mailman's round, so as to constitute a single batch of mail items which is also ordered according to the order of distribution of the mail items in the mailman's round.

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## **Process and machine for merging ordered batches of objects, in particular batches of mail items**

The invention pertains to a process for merging in particular batches of mail items such as letters, each previously ordered according to the order of distribution of the mail items in the mailman's round, so as to constitute a single batch of mail items which is also ordered according to the order of distribution of the mail items in the mailman's round.

In mail distribution offices, it is usual practice to merge or bundle together batches of mail items which originate from various sorting offices so as to constitute a single batch of mail items which is prepared for the mailman's round. Hitherto, the merging of these batches of mail items has been carried out manually and therefore requires a great deal of time.

The purpose of the invention is to propose a process for automatically merging several batches of mail items.

To this end, the subject of the invention is a process for merging in particular batches of mail items, each previously ordered according to the order of distribution of the mail items in the mailman's round, so as to constitute a single batch of mail items which is also ordered according to the order of distribution of the mail items in the mailman's round, consisting in

a) loading said batches of mail items to be merged respectively into corresponding destacking units each able to deliver in series the mail items of a corresponding batch,

b) destacking a certain number of mail items from each destacking unit and causing each destacked mail item to travel past a device for reading the postal address of the mail item before transferring it to a dynamic-storage magazine which is associated with said destacking unit and in which the mail items are moved in series around a storage loop;

c) analyzing in a control/command unit of the destacking units and of the dynamic-storage magazines, the postal addresses of the mail items pending in the dynamic-storage magazines so as to control the transferring of these mail items to a conveyor to which the dynamic storage magazines are linked in parallel, according to a certain sequence in such a way that the mail items exit the conveyor in series according to their order of distribution in the mailman's round;

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d) repeating steps b) and c) until the destacking units are completely emptied.

With the process according to the invention, several batches of mail items can be automatically merged in a single pass. The postal address recovered by the reading device can be a bar code which is now widely used in postal sorting offices.

According to a particular mode of implementation of the process according to the invention, in step b) indicated above, said mail items are transferred from a destacking unit to at least two dynamic-storage magazines each having a storage loop, these two dynamic-storage magazines being linked in parallel to said destacking unit and to the conveyor. It has been observed that it is preferable to use several storage loops of low storage capacity associated with a destacking unit rather than a single storage loop of larger storage capacity so as to transfer the mail items more speedily to the conveyor. The number of storage loops associated with a destacking unit and the storage capacity of each loop is a compromise between the speed of merging of the batches of mail items and the interclassification window required between batches of mail items.

An exemplary implementation of the process according to the invention is described hereinafter in detail and illustrated in the drawings.

Figure 1 shows very diagrammatically a machine for merging batches of mail items according to the process of the invention.

Figure 2 is a flowchart illustrating the manner of operation of the machine shown in Figure 1.

In Figure 1, the machine for merging batches of mail items according to the process of the invention comprises several destacking units, here two destacking units D1 and D2, each able to serialize mail items of a batch of mail items which is preordered for the mailman's round, here the batches L1 and L2 which are loaded respectively into the destacking units D1 and D2.


The exit of each destacking unit is linked to one or more dynamic-storage magazines which is or which are associated with the relevant destacking unit. In each dynamic-storage magazine, the mail items indicated by A are moved continuously in series around a storage loop.

In the example of Figure 1, the exit of the destacking unit D1 is linked to two storage loops M11 and M12 by way of a series conveyor C1, the entrances E of the two storage loops M11 and M12 being linked in parallel to the conveyor C1.

The destacking unit D2 is linked to two other storage loops M21 and M22 by way of another series conveyor C2. The entrances E of the two storage loops M21 and M22 are linked in parallel to the conveyor C2.

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# PATENT COOPERATION TREATY

15 OCT 2001 

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

## PCT

### NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Rule 71.1)

To:

PRUGENEAU, Philippe  
Cabinet Prugneau - Schaub  
36 rue des Petits Champs  
75002 PARIS  
FRANCE

Date of mailing (day/month/year)	11.10.2001
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Applicant's or agent's file reference BR-25430/WO
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<b>IMPORTANT NOTIFICATION</b>
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International application No. PCT/EP00/10502	International filing date (day/month/year) 25/10/2000	Priority date (day/month/year) 26/10/1999
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Applicant MANNESMANN DEMATIC POSTAL AUTOMATION S.A. et al.
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1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

#### 4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Riebel, O  Tel. +49 89 2399-2967
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# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>BR-25430/WO</b>	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. <b>PCT/EP00/10502</b>	International filing date ( <i>day/month/year</i> ) <b>25/10/2000</b>	Priority date ( <i>day/month/year</i> ) <b>26/10/1999</b>
International Patent Classification (IPC) or national classification and IPC <b>B07C3/02</b>		
Applicant <b>MANNESMANN DEMATIC POSTAL AUOTMATION S.A. et al.</b>		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 4 sheets.</p>		
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I    <input checked="" type="checkbox"/> Basis of the report</li> <li>II   <input type="checkbox"/> Priority</li> <li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV   <input type="checkbox"/> Lack of unity of invention</li> <li>V    <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI   <input type="checkbox"/> Certain documents cited</li> <li>VII <input type="checkbox"/> Certain defects in the international application</li> <li>VIII <input type="checkbox"/> Certain observations on the international application</li> </ul>		
Date of submission of the demand  <b>07/05/2001</b>	Date of completion of this report  <b>11.10.2001</b>	
Name and mailing address of the international preliminary examining authority:   <b>European Patent Office</b> D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  <b>Mayer, R</b>  Telephone No. +49 89 2399 2094	



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# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/10502

## I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

### Description, pages:

3-6 as originally filed

1,2 as received on 18/09/2001 with letter of 12/09/2001

### Claims, No.:

1-8 as received on 18/09/2001 with letter of 12/09/2001

### Drawings, sheets:

1/2,2/2 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

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# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/10502

- ☐ the description,      pages:
- ☐ the claims,      Nos.:
- ☐ the drawings,      sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Yes:	Claims	1-8
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-8
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-8
	No:	Claims	

2. Citations and explanations  
**see separate sheet**

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**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/EP00/10502

Item V:

The preamble of claim 1 is known from EP-A-0834354.

Difference of claims 1 and 4: A destacking unit is provided with a first and a second dynamic-storage magazine, and a control unit is present for loading the first storage magazine with a certain number of first ordered object and for loading the second magazine with an amount of following ordered objects.

US-A-4244672: The objects are delivered to the buffers 10 in a random manner (col. 3). Therefore, the subject-matter of claims 1 and 4 is considered to involve an inventive step. The dependent claims concern particular embodiments of claims 1 and 4, respectively. The industrial applicability is obvious.

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**Process and machine for merging ordered batches of objects, in particular batches of mail items**

The invention pertains to a process for merging in particular batches of mail items such as letters, each previously ordered according to the order of distribution of the mail items in the mailman's round, so as to constitute a single batch of mail items which is also ordered according to the order of distribution of the mail items in the mailman's round.

In mail distribution offices, it is usual practice to merge or bundle together batches of mail items which originate from various sorting offices so as to constitute a single batch of mail items which is prepared for the mailman's round. Hitherto, the merging of these batches of mail items has been carried out manually and therefore requires a great deal of time. < - >

The purpose of the invention is to propose a process for automatically merging several batches of mail items with short transit time loops associated to the destacking units.

To this end, the subject of the invention is a process for merging in particular batches of mail items ~~each previously ordered according to the order of~~ distribution of the mail items in the mailman's round, so as to constitute a single batch of mail items which is also ordered according to the order of distribution of the mail items in the mailman's round, consisting in

a) loading said batches of mail items to be merged respectively into corresponding destacking units each able to deliver in series the mail items of a corresponding batch,

b) destacking a certain number of mail items from each destacking unit and causing each destacked mail item to travel past a device for reading the postal address of the mail item before transferring it to a dynamic-storage magazine which is associated with said destacking unit and in which the mail items are moved in series around a storage loop;

c) analyzing in a control/command unit of the destacking units and of the dynamic-storage magazines, the postal addresses of the mail items pending in the dynamic-storage magazines so as to control the transferring of these mail items to a conveyor to which the dynamic storage magazines are linked in parallel, according to a certain sequence in such a way that the mail items exit the conveyor in series according to their order of distribution in the mailman's round.

< EP-834354 discloses a process according to the preamble of claim 1 wherein the destacking units, disposed in succession along the conveyor path, deliver the objects directly to the conveyor in a time sequence determined by their transport along the conveyor path. US-4244672 discloses a process for merging batches of objects wherein the destacking units deliver the objects to the conveyor through a recirculation buffer. >

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~~d) repeating steps b) and c) until the destacking units are completely emptied~~ *as defined in claim 1.*

With the process according to the invention, several batches of mail items can be automatically merged in a single pass. The postal address recovered by the reading device can be a bar code which is now widely used in postal sorting offices.

~~According to a particular mode of implementation of the process~~ according to the invention, in step b) indicated above, said mail items are transferred from a destacking unit to at least two dynamic-storage magazines each having a storage loop, these two dynamic-storage magazines being linked in parallel to said destacking unit and to the conveyor. It has been observed that it is preferable to use several storage loops of low storage capacity associated with a destacking unit rather than a single storage loop of larger storage capacity so as to transfer the mail items more speedily to the conveyor. The number of storage loops associated with a destacking unit and the storage capacity of each loop is a compromise between the speed of merging of the batches of mail items and the interclassification window required between batches of mail items.

An exemplary implementation of the process according to the invention is described hereinafter in detail and illustrated in the drawings.

Figure 1 shows very diagrammatically a machine for merging batches of mail items according to the process of the invention.

Figure 2 is a flowchart illustrating the manner of operation of the machine shown in Figure 1.

In Figure 1, the machine for merging batches of mail items according to the process of the invention comprises several destacking units, here two destacking units D1 and D2, each able to serialize mail items of a batch of mail items which is preordered for the mailman's round, here the batches L1 and L2 which are loaded respectively into the destacking units D1 and D2.

The exit of each destacking unit is linked to one or more dynamic-storage magazines which is or which are associated with the relevant destacking unit. In each dynamic-storage magazine, the mail items indicated by A are moved continuously in series around a storage loop.

In the example of Figure 1, the exit of the destacking unit D1 is linked to two storage loops M11 and M12 by way of a series conveyor C1, the entrances E of the two storage loops M11 and M12 being linked in parallel to the conveyor C1.

The destacking unit D2 is linked to two other storage loops M21 and M22 by way of another series conveyor C2. The entrances E of the two storage loops M21 and M22 are linked in parallel to the conveyor C2.

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## AMENDED CLAIMS

1/ Process for merging batches of objects (L1,L2), each previously ordered according to a certain classification of the objects (A), so as to constitute a single batch of objects ordered according to said classification, in which process said batches are loaded in destacking units (D1,D2) which deliver said objects in series and in which each object destacked from a destacking unit travels past a device (DL1,DL2) for reading a classification cue of said object to be transferred to a conveyor (CS) linked to said destacking units in a such a way that the objects exit the conveyor in series according to the order corresponding to said classification, characterized in that said objects destacked from a destacking unit (D1,D2) are transferred to said conveyor (CS) through at least a first (M11,M21) and a second (M12,M22) dynamic-storage magazine linked and associated to said destacking unit, said destacked objects moving in series into each dynamic-storage magazine around a storage loop, in that a control/command unit (U) controles each destacking unit (D1,D2) and the first and second dynamic-storage magazine (M11,M12 ;M21,M22) associated to said destacking unit for loading said first dynamic-storage magazine (M11,M21) with a certain number of first ordered objects destacked from said destacking unit and for loading said second dynamic-storage magazine (M12,M22) with a certain amount of following ordered objects destacked from said destacking unit, and in that said control/command unit (U) analyses the classifying cues for the objects pending in the dynamic-storage magazines to cause said first dynamic-storage magazine (M11,M21) associated to a destacking unit to be emptied to said conveyor before said second dynamic-storage magazine (M12,M22) associated to said destacking unit to be emptied to said conveyor, the loading and the emptying of said dynamic-storage magazines being repeated until said destacking units are completely emptied.

2/ Process according to claim 1, in which said first (M11,M21) and second (M12,M22) dynamic-storage magazine linked and associated to a destacking unit (D1,D2) operate alternatively to be loaded with destacked objects and emptied to said conveyor.

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3/ Process according to any one of claims 1 to 2, in which said objects are mail items and in that said classification is an order of distribution of mail items in the mailman's round.

4/ Machine for carrying out the process according to any one of claims 1 to 3, in which said first (M11,M21) and second (M12,M22) dynamic-storage magazine linked and associated to a destacking unit (D1,D2) have corresponding entrances (E) linked in parallel to said destacking unit and corresponding exits (S) linked in parallel to said conveyor (CS), and in which a device (DL1,DL2) for reading a classification cue is disposed between each destacking unit (D1,D2) and its first and second associated dynamic-storage magazine (M11,M12 ;M21,M22).

5/ Machine according to claim 4, in which a delay line ( R) is mounted between the exit (S) of each dynamic-storage magazine (M11,M12,M21,M22) and said conveyor (CS).

6/ Machine according to any one of claims 4 to 5, in which a further dynamic-storage magazine (M3) is mounted in parallel with said conveyor (CS) downstream said dynamic-storage magazines (M11,M12,M21,M22).

7/ Machine according to claim 6, in which said further dynamic-storage magazine (M3) comprises a storage loop.

8/ Machine according to any one of claims 4 to 7, in which said first and second dynamic-storage magazine (M11,M12 ;M21,M22) linked and associated to a destacking unit (D1,D2) have the same storage capacity.

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